Space Weather Forecast

Issued on Monday, 28 November 2022 at 12:56 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor Geomagnetic Storm (G1) intervals throughout the period.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Very Low in the past 24 hours, with no discernible flares. There are currently four sunspots on the Earth-facing disk, all of which are rather small, simple and apparently stable. No new Earth-directed coronal mass ejections have been observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar wind parameters, as measured by ACE and DSCOVR at L1, were indicative of waning coronal hole high speed stream influences and perhaps the arrival of an embedded CME. Solar wind speeds have increased from Slightly Elevated levels to Elevated-Strong levels. The interplanetary magnetic field rose from weak to moderate, peaking at 28/0428 UTC. The important north south component has fluctuated fairly erratically throughout, falling neutral for a time. Geomagnetic activity was largely Unsettled (Kp 3) with one Active (Kp 4) period late on 27 Nov and two Minor Storm (G1/Kp 5) intervals early day 1 (28 Nov).

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to remain Low or Very Low, with a chance of isolated Common-class flares and a slight chance of isolated Moderate flares. The sunspots currently on the visible disc are rather small and simple, three of which are transiting towards the western limb.

Solar Wind / Geomagnetic Activity: Earth is currently under the waning influence of a coronal hole high speed stream, with ongoing enhancement due to the arrival of a coronal mass ejection, with impacts persisting into day 2 (29 Nov). There are two further coronal hole high speed streams that may arrive at Earth in coming days, the first is expected from day 2 (29 Nov), with Elevated solar wind speeds and the second is expected to arrive either late on day 3 (30 Nov) or more likely into day 4 (1 Dec), with speeds perhaps becoming briefly Strong.

Geomagnetic activity is expected to be mainly Quiet to Unsettled, with Active intervals and a chance of G1/Minor storm intervals each day due to either coronal mass ejection or coronal hole high speed stream effects. This risk increases on day 4 due to the anticipated arrival of and connection to a large coronal hole.

Energetic Particles / Solar Radiation: No solar radiation storms are currently expected during the forecast period.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	40	30	30	40
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	5	5	5
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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